

FIG. 1

104116

FIG. 2

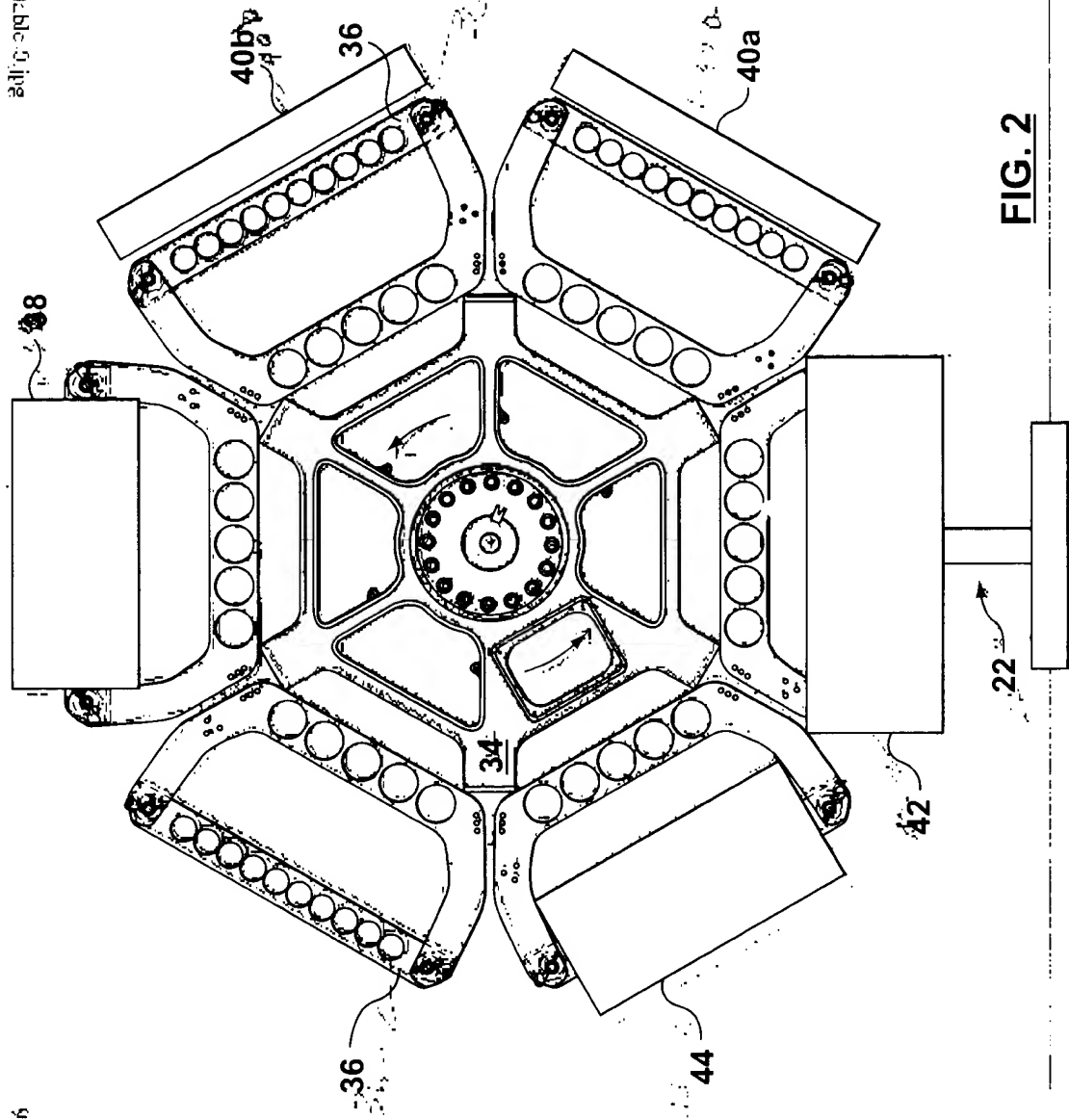


FIG. 2

FIG. 2

FIG. 2

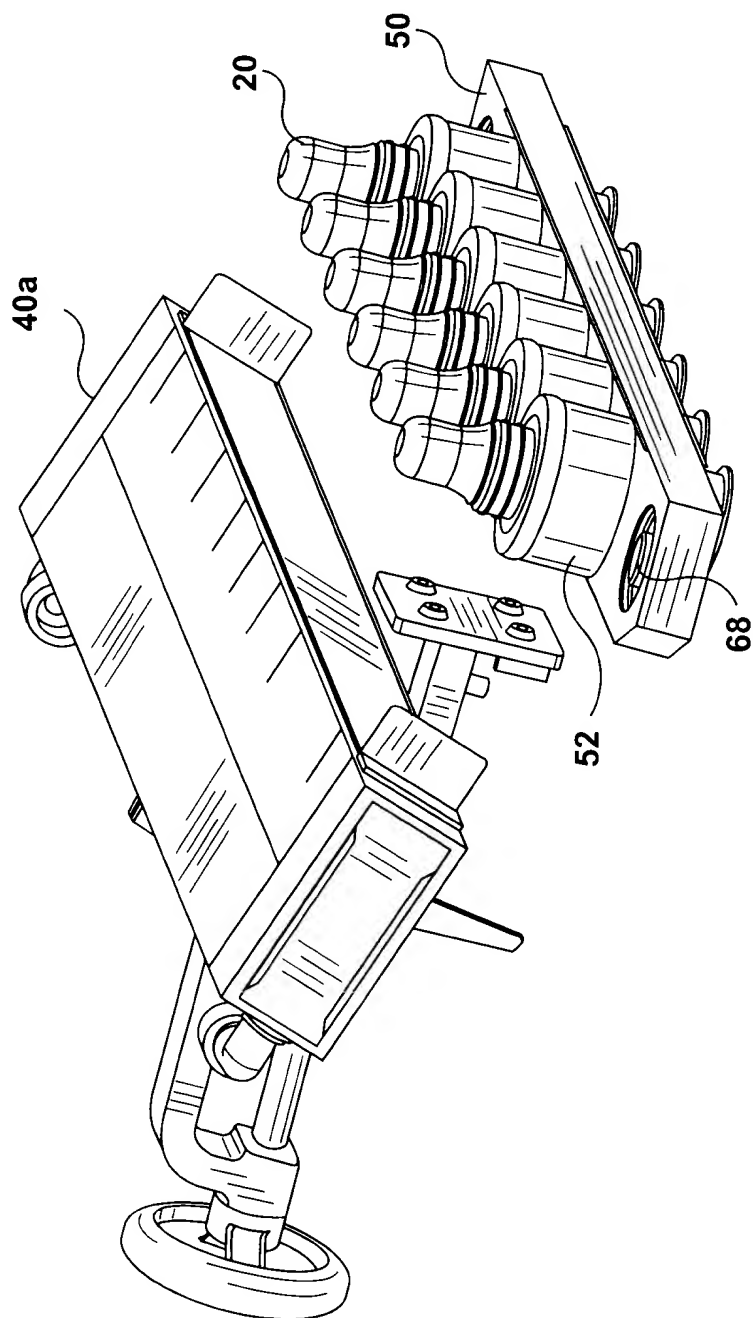


FIG. 3

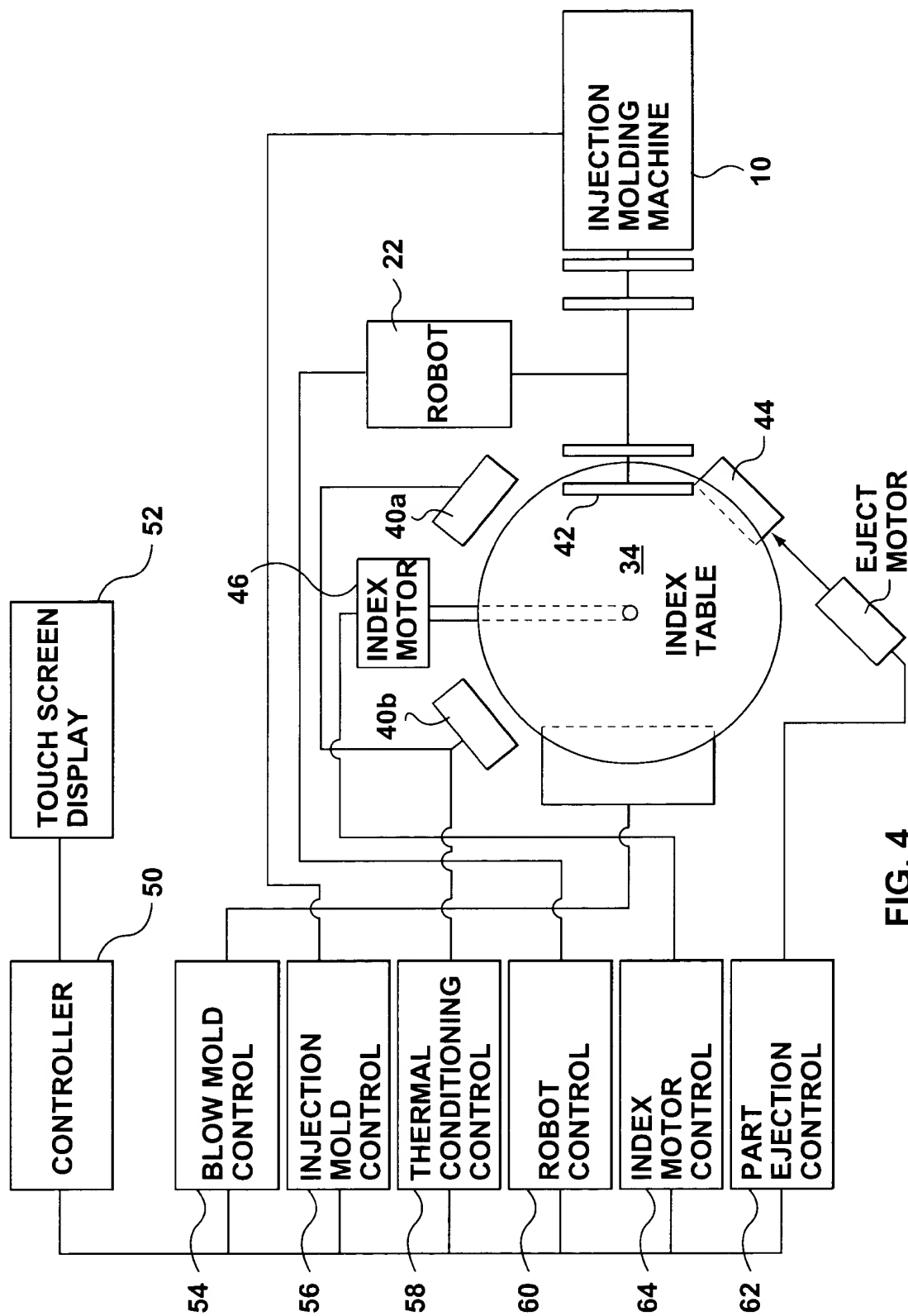


FIG. 4

SYNCHRONOUS MODE
IMM 12.0s, x [BMM 4.0s + 2s DWELL after each blow cycle]

	CYCLE TIME (SEC.)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0
IMM	1 IMM Process	IMM Process																							
	2 Ejectors Fwd/Dwell/Back																								
	3 Mold Open/Turret Rotate/Mold Close																								
	1 Move to Photo Eye 2																								
ROBOT	2 Drop Row 2																								
	3 Move to Pick Position																								
	4 Pick Dwell / Cool Jet Blow																								
	5 Part Transfer																								
BMM	6 Move to Photo Eye 1																								
	7 Drop Row 1																								
	1 Conditioning Station 1																								
	2 Conditioning Station 2																								
BMM	1 Table Index																								
	2 Mold Clamp & Clampup																								
	3 Pre-Blow, Stretch, Blow & Exhaust																								
	4 Unclamp & Mold Open																								

FIG. 5

SYNCHRONOUS MODE

BLOW MOLD MACHINE		TABLE		ROBOT		INJECTION MOLDING MACHINE		THERMAL CONDITIONING STATION 40a		THERMAL CONDITIONING STATION 40b	
0.0 sec	MOLD CLOSED	TABLE STATION-ARY		DROP GROUP 2 ON TABLE		GROUP 1 AND 2 PARISONS CREATED IN INJECT-ION UNIT		CONDIT-IONING GROUP 1	CONDIT-IONING GROUP 2	STATION OFF	STATION OFF
0.75 sec	GROUP 1 ARTICLES BLOWN										
1.0 sec											
2.75 sec	MOLD IDLE	TABLE INDEXED		MOVE TO PICK POSITION AND DWELL 7.25 sec				STATION OFF	STATION OFF		
4.75 sec	MOLD OPEN										
5.5 sec											
6.0 sec	MOLD CLOSED	TABLE STATION-ARY		REC GROUP 1 & 2 FROM INJ. UNIT AND ROTATE				CONDIT-IONING GROUP 2	CONDIT-IONING GROUP 1		
8.25 sec	GROUP 2 ARTICLES BLOWN										
8.75 sec	MOLD IDLE			MOVE TO POS. TO DROP GROUP 1							
9.5 sec											
10.0 sec											
10.5 sec	MOLD OPEN	TABLE INDEXED		DROP GROUP 1 ON TABLE		MOLD OPENED TURRET ROTATED AND MOLD CLOSED		STATION OFF	STATION OFF		
10.75 sec											
11.5 sec											
12.0 sec											

FIG. 6

	CYCLE TIME (SEC.)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0
IMM	1 IMM Process	IMM Process - SHOT 2																							
	2 Ejectors Fwd/Dwell/Back																				Ejectors Fwd / Dwell / Back				
	3 Mold Open/Turret Rotate/Mold Close																					Mold Open / Turret Rotate / Mold Closed			
ROBOT	1 Move to Photo Eye 2																						Move to Photo eye 2		
	2 Drop Row 2																								
	3 Move to Pick Position																								
	4 Pick Dwell / Cool Jet Blow																								
	5 Part Transfer																				Part Transfer - Shot 1				
	6 Move to Photo Eye 1																					Move to Photo Eye 1			
	7 Drop Row 1																						Drop Row 1		
BMM	1 Conditioning Row 1 Station 1																								
	2 Conditioning Row 1 Station 2																								
	1 Conditioning Row 2 Station 1																								
	2 Conditioning Row 2 Station 2																								
	1 Table Index																							Table Index	
	2 Mold Clamp & Clampup																								
	3 Pre-Blow, Stretch, Blow & Exhaust																								
	4 Uncrimp & Mold Open																								

FIG. 7A ASYNCHRONOUS MODE
IMM 12.0s, x [BMM 4.0s + 4.0s DWELL AT END OF 2nd blow cycle]

	CYCLE TIME (SEC.)	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0
IMM	1 IMM Process																								
	2 Ejectors Fwd/Dwell/Back																								
	3 Mold Open/Turret Rotate/Mold Close																								
	1 Move to Photo Eye 2																								
ROBOT	2 Drop Row 2																								
	3 Move to Pick Position																								
	4 Pick Dwell / Cool Jet Blow																								
	5 Part Transfer																								
	6 Move to Photo Eye 1																								
	7 Drop Row 1																								
	Conditioning Row 1 Station 1																								
BMM	2 Conditioning Row 1 Station 2																								
	1 Conditioning Row 2 Station 1																								
	2 Conditioning Row 2 Station 2																								
	1 Table Index																								
	2 Mold Clamp & Clampup																								
	3 Pre-Blow, Stretch, Blow & Exhaust																								
	4 Uncrimp & Mold Open																								

FIG. 7B

	CYCLE TIME (SEC.)	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0
IMM	1 IMM Process																								
	2 Ejectors Fwd/Dwell/Back																								
	3 Mold Open/Turret Rotate/Mold Close																								
	1 Move to Photo Eye 2																								
ROBOT	2 Drop Row 2		Drop Row 2																						
	3 Move to Pick Position				Move to Pick Position																				
	4 Pick Dwell / Cool Jet Blow																								
	5 Part Transfer																								
	6 Move to Photo Eye 1																								
	7 Drop Row 1																								
	1 Conditioning Row 1 Station 1	Conditioning SHOT 2, Row 1 in conditioning station 1																							
	2 Conditioning Row 1 Station 2	Conditioning SHOT 2, Row 1 in conditioning station 2																							
	1 Conditioning Row 2 Station 1	Conditioning SHOT 2, Row 2 in conditioning station 1																							
	2 Conditioning Row 2 Station 2																								
	1 Conditioning Row 2 Station 1																								
	2 Conditioning Row 2 Station 2	Conditioning SHOT 1, Row 2 in conditioning station 2																							
BMM	1 Table Index								Table Index																Table Index
	2 Mold Clamp & Clampup	Mold Close & Clamp up																							
	3 Pre-Blow, Stretch, Blow & Exhaust																								
	4 Mold Open																								Unclamp & Mold open

FIG. 7C

[illegible]

FIG. 7D

ASYNCHRONOUS MODE

BLOW MOLD MACHINE			TABLE		ROBOT		INJECTION MOLDING MACHINE		THERMAL CONDITIONING STATION 40a		THERMAL CONDITIONING STATION 40b	
0.0 sec	MOLD CLOSED		TABLE STATION-ARY		DROP GROUP 2 ON TABLE	GROUP 1 AND 2 PARISONS CREATED IN INJECT-ION UNIT			CONDIT-IONING GROUP 2			
0.75 sec	GROUP 1 BLOWN				MOVE TO PICK POSITION AND DWELL							
1.0 sec												
2.75 sec	MOLD OPEN											
3.5 sec			TABLE INDEXED									
4.0 sec												
4.75 sec	MOLD CLOSED		TABLE STATION-ARY						CONDIT-IONING GROUP 2	CONDIT-IONING GROUP 1		
8.25 sec	GROUP 2 BLOWN AND MOLD KEPT CLOSED				REC GROUP 1 & 2 FROM INJ. UNIT AND ROTATE							
9.5 sec					MOVE TO POS. TO DROP TO GROUP 1							
10.0 sec												
10.5 sec												
10.75 sec												
11.5 sec	MOLD OPEN				DROP GROUP 1	MOLD OPENED TURRET ROTATED AND MOLD CLOSED						
12.0 sec			TABLE INDEXED		ROBOT IDLE							

FIG. 8